There appear to be several discrepancies between the earlier and the later parts of the book. On p. 178 mention is made of "a battery known as the *Pile Marie Davy*," in which *sulphate of mercury* is used; and which is stated to be *weaker* than Daniell's cell, but to have *been used to some extent in France.* On p. 434 appears an account of the "*Marié-Davy Battery*," which "has been *much used in England, and is largely employed in France and on the Continent.*" It is twice stated to contain *bisulphide of mercury;* and lower down on the same page it is declared on the authority of Latimer Clark to have an electromotive force of 76, as compared with 56 for a Daniell's cell.

The divided ring electrometer of Sir W. Thomson is described on p. 79. Another description and a figure of the instrument are given on p. 529. The quadrant electrometer, of which there is no mention in the early chapter where Peltier's and other electrometers are given, is described at some length and figured on p. 537.

In a couple of pages devoted to the "Insufficiency of the Contact Theory" of voltaic electricity, the authorities cited are Faraday, Roget, and "lastly," Sir W. Snow Harris; the later fundamentally important researches of Hankel, Thomson, Kohlrausch, and Clifton, being absolutely ignored.

Two pages (22 and 23) are devoted to Varley's multiplier, but there is not a word about the earlier invention of Nicholson, nor the more recent "replenisher" of Sir W. Thomson. Nor is there a single word about the Holtz machine.

In magnetism there is no attempt to explain the meaning of the term "declination," and the word "variation" is made to do duty both for declination and for the variation of declination, in a manner most perplexing to the uninitiated in electrical terms. And yet the book is avowedly "written under the idea" that the student "approaches the subject from the datum line of ignorance!"

We cannot accept without protest the following statement:—

"The fall of tension is always accompanied by its conversion into heat" (p. 198). Nor this: "With sulphuric acid the iöns (*sic*) are H and SO_4 (Sulphionide of Hydrogen)."

The term the "*absolute quantity of electric force in matter*," used on p. 223, is open to serious objection. On p. 209 we read that "the common non-absolute unit of work involving the product of a weight into a length is styled *kilogramme*, or foot-pound."

The following statement:—"we have, calling C the charge, Q the quantity, and S the surface, $C = \frac{Q^2}{S^2}$," appears on p. 61. After pondering over this formula, we give it up.

We are compelled to take exception to the following manner of stating the well-known law of Ohm:—"Thus let F denote the actual force of the current, that is, its power to produce *heat*, magnetism, chemical action, *or any of its other effects;* E the electromotive force, and R the resistance of the wires and liquids, then $F = \frac{E}{R}$" (p. 199). To say nothing of the assumption that all the "effects" of the current are simply proportional to the current strength, we protest against the introduction of that much-abused word, *force*, where every other treatise on electricity in the language has put "strength" of current or "quantity" of current or "intensity" of current. On p. 209 the formula again appears, this time as $C = \frac{E}{R}$, which is the form adopted by Maxwell, Jenkin, Culley, Foster, Chrystal, the British Association Committee, and in the well-known treatises of Ganot and Deschanel. Guthrie uses $Q = \frac{E}{R}$, and the form $I = \frac{E}{R}$ is used by Maxwell, Cumming, Clark and Sabine, Verdet, Daguin, Wiedemann, Jamin, and continental writers generally. It is very desirable that needless departures from one or other of the established forms should be discouraged. The "Return Charge" of the Leyden jar, so-called on p. 46, is now almost universally denominated the "residual" charge, a term which is far preferable, as it cannot be confounded with the return shock or return stroke, or "back stroke," as it is termed on p. 91.

In the chapter on the telephone occurs the following passage:—"In 1874 Mr. Elisha Gray, of Chicago, America, succeeded in effecting the transmission, through a wire, by means of electricity, of the variable intensity, as well as the pitch of a sound. Subsequently he invented a form of telephone by which all the three characteristics of sound could be transmitted. *As a result, the electrical transmission of articulate speech became an accomplished fact.* It remained, however, for Prof. Graham Bell, of the Boston University, to accomplish this latter feat in the most effective manner." Do we understand Mr. Preece to endorse Elisha Gray's claims to precede Bell as the inventor of an *articulating* telephone? As a minor blemish, we notice the name of Philip Reis appears as Reiss. Many persons confound the inventor of the original singing telephone with Peter Riess the author of the *Reibungselectricität;* and the misspelling of his name helps to perpetuate the error. One other quotation from the editorial additions is not devoid of interest:—

"The subdivision of the (electric) light has recently occupied the attention of inventors. Jablochkoff works four lamps simultaneously. Wallace has worked ten. Attempts have been made to do this on a much larger scale by raising platinum and iridium to incandescence, or to that temperature just below melting-point. A soft and gentle light is thus obtained. But the result has not been commercially successful, *though probably this is the direction in which ultimate success will be obtained*" (p. 576).

We wish heartily that the editor of this new edition had himself re-written the work; a reviewer's task would then have been much more agreeable.

SILVANUS P. THOMPSON

LENZ'S SKETCHES FROM WEST AFRICA

Skizzen aus Westafrika. Selbsterlebnisse von Dr. Oscar Lenz. (Berlin: Hofmann and Co., 1878.)

DR. LENZ'S "Sketches from Western Africa" are unusually interesting and instructive. They are not descriptions of travel in the ordinary sense of the word, but form a collection of essays, perfectly independent of each other, describing in a masterly manner the natural and social conditions of that scantily investigated coast, as they presented themselves to the eminent traveller during a journey undertaken at the request of the German African Society, and extending over three years (1874 to 1877). Everything, therefore, which Dr. Lenz describes, he has seen and witnessed himself, and apart from this important advantage the sketches have that additional one, that they are written from a completely unprejudiced and neutral point of view as far as the social or political conditions of the various West African tribes are dwelt upon. Thus a series of no less than fourteen different pictures of travel are presented to the reader, and it is indeed difficult to determine which of them are the most interesting.

After a condensed account of the previous exploring expeditions, and an explanation of the great difficulties attending all travels in Western Africa, Dr. Lenz begins his first sketch with the French colony of Gaboon. In June, 1874, he landed for the first time on African soil, viz., on the small island of Elobi in the Bay of Corisco. This bay is situated in lat. 1° N., between Capes Ninje (St. Jean) and Esteiras and contains the three islands—Corisco, the larger and the smaller Elobi; Spain numbers these islands amongst its colonies, as is also the case with the large and well-wooded island Fernando Po, a few degrees further north, with its high volcano called Clarence Pic. Between Capes Santa Clara and Pongara the sea forms a wide inlet into the coast of the mainland, and here the French have established a colony in the fine estuary of Gaboon and have extended their influence even to the mouth of the mighty Ogowe River. Two large rivers, the Muni and the Mundah, the sources of which are situated in the outskirts of the West African Slate Mountains, or the Sierra do Crystal, have their estuaries in the Bay of Corisco, which has flat banks thickly clad with evergreen mangrove trees. These mangrove swamps form the dark and dense wall which here protects the African continent against European trespassers, as they give rise to the fatal fever miasma which has won for this coast the unenviable reputation of being the most deadly one in the world. Many a traveller who landed here full of hope and with a view of exploring the interior and adding his share towards making it accessible to commerce and civilisation, has acquired in these mangrove swamps the germs of premature death; many an active and striving colonist who sent home to Europe the costly natural products of the land and who introduced to the natives the useful appliances and productions of the "n'tangani," *i.e.*, white men, here fell a victim to the ever-prevalent fevers.

From Elobi Dr. Lenz proceeded to Gaboon, a journey which in the opposite direction a steamer can perform in about eight hours, but which on account of both wind and tide coming in a south-northerly direction took some three days in a sailing vessel. The sanitary conditions of Gaboon are much better than those of the coast a little further north, yet malaria fevers are frequent. The annual mean temperature, although the colony is situated almost on the equator, does not rise beyond 27-28° C.; yet the fact that the thermometer never sinks below 20° C. makes the climate unbearable to all Europeans in the long run. The best months for travelling here are June, July, August, and the beginning of September. In the middle of the latter month the rainy season sets in and lasts till the middle of January, when a short dry season begins, lasting to the beginning of March. Then another rainy period commences and continues to the end of May. It is very peculiar that during the long dry period from the end of May till September the sky is invariably overcast, while during the rain season the sun sends down its perpendicular rays with all their intensity, the sky covering itself with heavy rain clouds only towards evening.

Dr. Lenz mentions a curious fact in connection with the sanitary conditions on the west coast of Africa:—

"It appears that amongst the European colonists each one thinks his particular place of residence to be the healthiest of all. Thus the colonists at Banana, a sandy strip of land near the mouth of the Congo, consider this place extremely healthy and know of no worse parts for fever than the Gaboon districts; but in the latter the colonists make the sign of the cross if the Congo is mentioned. The inhabitants of St. Paul de Loanda are in raptures about their upper town (in the lower town, close to the sea, there are only stores and shops) and others again designate this largest town of West Africa, the only place indeed which has a right to the name of town, as the worst plague-hole in the world. Unfortunately there is no place on the west coast which is unanimously designated as healthy (perhaps with the only exception of Mossamedes, in the south of Benguela), but on the other hand there are a number of districts about the deadly climate of which nobody is in doubt. To these Gaboon distinctly does not belong, while Cape Lopez in the delta of the Ogowe estuary does; and so does the island of Fernando Po and a number of the so-called 'oil rivers,' such as Camerun, Old and New Calabar, Bonny, Opobo, &c., places of great importance in the palm-oil trade."

The native population of Gaboon belongs to the great family of Bantu negroes, and they call themselves Mpungwe. They are a relatively fine race, and certainly superior in frame and growth to the neighbouring Akelle, Okota, and others. They have not progressed very much in civilisation in spite of their long connection with the French, yet there exists a tolerably friendly feeling betwixt them and the colonists; they are even to a certain extent guided by French laws. Their political significance is very small; the last of their kings, Denis by name, died two years ago aged over ninety years. The Mpungwe live in little huts, of which some ten or twenty form a village, and these are disseminated in every direction among the "factories" of the Europeans. The former occupation of the native Gaboonese was solely and exclusively slave trading, but at present their principal object in life seems to be to obtain goods on credit from European colonists, and to exchange them against gums, ivory, or ebony in the interior. Apart from this the slave trade still flourishes among the Mpungwe themselves, indeed the wealth of a Mpungwe nigger consists principally in the number of his slaves, whom, however, he treats very kindly. Polygamy of course exists generally among the West African natives, also with the Mpungwe, although most of the latter call themselves Christians. But with all this the superstitious customs and fetish creed of past centuries exist to this very day, and if the wealthy Gaboonese laughs at them in public he yet continues the same old religious humbug on his travels into the interior. Apart from the Gaboonese proper, the Mpungwe, different other tribes live close to the European colonies, such as the mighty Fan and

Akelle. These strive to replace the Mpungwe. To the north, towards the Mundah River, the Osekiani, the Mbenga and Mbuschu tribes are met with, which occupy the whole area of the Bay of Corisco. All these tribes speak different languages and differ in their manners and customs.

The colony of Gaboon consists of three little villages inhabited by Europeans—Plateau, Glass, and Baraka (or Libreville). They are situated about a mile from one another. The French Government house, offices, and barracks, as well as the Catholic Mission house and four or five factories are at Plateau; eight or ten English and German factories are at Glass, and the Anglican Mission house is at Baraka. Each factory forms a complex of houses by itself, all comprised in an inclosure; there is generally the dwelling-house of the colonist, the sale rooms or shops, a store-house, a kitchen (always built separately), a house for the workmen, and a shed for canoes and boats. The houses are built of wooden planks imported from Europe, and all have a verandah. The roofs are covered with mats, which are impenetrable even to the most violent rain. The only house built of stone is the Government house.

Dr. Lenz now gives minute details on the political condition of the colony as well as of the work and progress of the religious missions, and concludes his sketch by an elaborate account of the commerce of the place.

In the above we have given but a scanty outline of Dr. Lenz's sketch of Gaboon. Our readers may judge of the interest of the whole work when we state that there are thirteen other chapters equally elaborate and crowded with details. Our space will not permit us to enter further upon the subject, and we must confine ourselves to the mere statement of the contents of the other chapters. Thus we have one on the Cape Lopez colony, then the Ininga, the Fan, and the Abongo tribes are treated in turn, the Fan being remarkable through their being cannibals and the Abongo through their extraordinarily small size, which entitles them to the appellation of a "tribe of dwarfs." A general description of the commercial conditions of West Africa follows, and we then come to some animated pictures of elephant and other hunting. The next chapters treat of the superstitious beliefs of the various tribes, of the free state of Liberia and the Croo Coast. A journey from the Okande land to the Osaka tribe and thence to the Aduma and the Banshaka is described in the three following sketches, and the two last ones are dedicated to a description of the Ogowe Lakes and the town of St. Paul de Loanda. We can recommend Dr. Lenz's book most heartily to all lovers of geographical and ethnographical science who are familiar with the German language.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.*]

The Average Flush of Excitement

I WITNESSED a curious instance of this on a large scale, which others may look out for on similar occasions. It was at Epsom, on the Derby Day last week. I had taken my position not far from the starting-point, on the further side of the course, and facing the stands, which were about half a mile off, and showed a broad area of white faces. In the idle moments preceding the start I happened to scrutinise the general effect of this sheet of faces, both with the naked eye and through the opera-glass, thinking what a capital idea it afforded of the average tint of the complexion of the British upper classes. Then the start took place; the magnificent group of horses thundered past in their fresh vigour and were soon out of sight, and there was nothing particular for me to see or do until they reappeared in the distance in front of the stands. So I again looked at the distant sheet of faces, and to my surprise found it was changed in appearance, being uniformly suffused with a strong pink tint, just as though a sun-set glow had fallen upon it. The faces being closely packed together and distant, each of them formed a mere point in the general effect. Consequently that effect was an averaged one, and owing to the consistency of all average results, it was distributed with remarkable uniformity. It faded away steadily but slowly after the race was finished. F. G.

Lunar Crater

ON April 1 last I saw, between Landsberg and Rheinhold, a small but very remarkable crater, which does not appear in Schmidt's map. It is situated east of a line joining the centres of the above craters, and at rather more than a third of the distance from the former to the latter. Either closely adjoining, or in the position of the small crater, there is an isolated hill within the angle of a forked ridge as shown by Schmidt, who must, undoubtedly, have noticed the crater if it existed at the time of his observation. Might it be that the hill seen by him subsequently opened out as a crater? I remarked neither the hill nor the ridge, but these, like many of Schmidt's objects, might be above my telescopic power, so I cannot say whether the crater is identical with the hill or not. Nearer Rheinhold there is a smaller crater not in Schmidt, who, however, shows a similar one that I failed to see not far off to the south. This may be only a case of misplacement in the map.

JOHN BIRMINGHAM

A Remarkable Meteor

A REMARKABLE meteor was seen in Western Australia on February 1 this year. The following account has been forwarded to me by Mr. S. Worsley Clifton, Collector of Customs at Freemantle:—

"A small black cloud on a clear day appeared in the east, travelling not very swiftly towards the north-west, which burst into a ball of fire with an apparent disk the size of the full moon, blood-red in colour; it left a train of black or dark-coloured vapour across the heavens which was visible for three-quarters of an hour. No sound was heard, sky perfectly clear, and thermometer 100° F. in the shade." ROBT. J. ELLERY

Observatory, Melbourne, April 16

Disease in Salmon

THERE has lately been much correspondence upon the subject of a disease affecting the scales of the salmon, and I chanced to come upon the passage which I inclose to you in an old book, the fly-leaf of which bears the autograph of *a* Duke of Richmond, the one, I imagine, who was at Brussels in 1815. I am not a scientific naturalist, and it is quite possible that this passage is familiar to those who are conversant with such subjects; but thinking it better to err on the side of superfluity than that of carelessness, I trouble you with it. W. WALKER

May 26

Extract from Rev. C. Cordiner's Letters to Thos. Pennant, Esq., on Antiquities and Scenery of the North of Scotland. Lond. 4*to*, 1780.

I here beg leave to introduce a memoir, relative to an insect attendant on the salmon which come up this river (the Devron), communicated to me by an ingenious friend.

The foul salmon, of which a drawing has been already sent to Mr. Pennant, was caught February 10, 1776. When brought into the house the colours upon this fish were remarkably lively. The general appearance was that of a reddish brown; but the